

Abstract of the Disclosure

The present invention provides a system in which a service providing apparatus on the Internet efficiently provides service including provision of information corresponding to a voice input. The system is configured as follows.

A service requesting apparatus 300 receives a voice indicating a service request from a user, and transmits voice data corresponding to the received voice to a service mediating apparatus 100 through a network 1. Based on the voice input from the user, the service mediating apparatus 100 specifies a speech recognition engine which is to recognize a voice. A service providing apparatus then performs a process according to a request recognized by the specified speech recognition engine.

Drawings

Figure 1:

- 100 ... SERVICE MEDIATING APPARATUS
- 101 ... STORAGE DEVICE
- 102 ... PROCESSING DEVICE
- 200A ... SERVICE PROVIDING APPARATUS A
- 201A ... STORAGE DEVICE
- 202A ... PROCESSING DEVICE
- 200B ... SERVICE PROVIDING APPARATUS B
- 200C ... SERVICE PROVIDING APPARATUS C
- 200D ... SERVICE PROVIDING APPARATUS D
- 300A ... SERVICE REQUESTING APPARATUS A
- 301A ... STORAGE DEVICE
- 302A ... PROCESSING DEVICE
- 300B ... SERVICE REQUESTING APPARATUS B
- 300C ... SERVICE REQUESTING APPARATUS C
- 300D ... SERVICE REQUESTING APPARATUS D
- 300E ... SERVICE REQUESTING APPARATUS E
- (1) ... ITALIAN RESTAURANT
- (2) ... INFORMATION/SERVICE
- (3) ... VOICE PORTAL CENTER
- (4) ... RESTAURANT GUIDANCE PROVIDER B
- (5) ... SPEECH RECOGNITION LINK
- (6) ... SPEECH RECOGNITION SERVICE PROVIDER C
- (7) ... SPEECH RECOGNITION SERVICE PROVIDER D

(8) ... VEHICLE A (AUTOMOBILE, TRAIN, AIRPLANE, OR SHIP)

(9) ... INDICATOR

(10) ... MICROPHONE

(11) ... SPEAKER

(12) ... VEHICLE C

(13) ... HOME B

(14) ... OFFICE D

(15) ... PORTABLE TERMINAL/PORTABLE PHONE

Figure 2:

201-A ... STORAGE DEVICE

202A ... PROCESSING DEVICE

203A ... INTERFACE

205A ... INFORMATION/SERVICE PROVIDING PROGRAM

206A ... DIALOG ORGANIZATION PROGRAM

207A ... VOICE BROWSER

208A ... SPEECH RECOGNITION ENGINE

209A ... TEXT-TO-SPEECH PROGRAM

(1) ... ITEM NAME

(2) ... PRICE

(3) ... IMAGE DATA

(4) ... XX PASTA

(5) ... 1,000 YEN

(6) ... MAP DATA

Figure 3:

101 ... STORAGE DEVICE
 102 ... PROCESSING DEVICE
 103 ... INTERFACE
 105 ... SERVICE MEDIATION TABLE A
 106 ... DIALOG ORGANIZATION PROGRAM
 107 ... VOICE BROWSER
 108 ... SPEECH RECOGNITION ENGINE
 109 ... TEXT-TO-SPEECH PROGRAM
 110 ... INFORMATION/SERVICE MEDIATION PROGRAM

Figure 4:

304C ... INDICATOR
 305C ... MICROPHONE
 306C ... SPEAKER
 307C ... TEXT-TO-SPEECH PROGRAM
 308C ... SPEECH RECOGNITION ENGINE

Figure 5:

100 ... SERVICE MEDIATING APPARATUS 100
 200A ... SERVICE PROVIDING APPARATUS 200A
 300C ... SERVICE REQUESTING APPARATUS 300C
 501 ... RECEIVE VOICE INPUT FROM USER
 502 ... TRANSMIT VOICE DATA

503 ... RECEIVE VOICE DATA

504 ... RECOGNIZE VOICE DATA

505 ... IS SPEECH RECOGNITION ENGINE OWNED BY
SERVICE MEDIATING APPARATUS 100 ? (SPECIFY LINK-TARGET
APPARATUS AND ITS SPEECH RECOGNITION ENGINE)

506 ... CONTROL REQUEST PROCESSING

507 ... RECOGNIZE REQUEST

508 ... PROCESS INFORMATION TO PROVIDE SERVICE

509 ... RECEIVE SERVICE/INFORMATION

Figure 6:

5051 ... DETERMINE LINK-TARGET APPARATUS

5052 ... SEARCH TABLE 105 BASED ON DETERMINED LINK-
TARGET APPARATUS

5062 ... CONTROL SPEECH RECOGNITION USING SPECIFIED
SPEECH RECOGNITION ENGINE

5063 ... FORM LINK WITH LINK-TARGET APPARATUS

Figure 7:

<prompt>SELECT A SHOP</prompt>

A<link="jump SERVICE PROVIDING APPARATUS 200A"

"engine SERVICE PROVIDING APPARATUS 200A"

Figure 8:

(1) ... TABLE 1

(2) ... COMMUNICATION DATA FORMATS AND COMMUNICATION
PROTOCOLS EMPLOYED BETWEEN TERMINALS OF SERVICE REQUESTING
APPARATUSES AND SERVICE MEDIATING APPARATUS

- (3) ... SERVICE REQUESTING APPARATUS
- (4) ... VOICE BROWSER
- (5) ... DIALOG ORGANIZATION
- (6) ... SPEECH RECOGNITION
- (7) ... VOICE ANALYSIS
- (8) ... VOICE INPUT
- (9) ... SERVICE MEDIATING APPARATUS
- (10) ... DATA FORMAT
- (11) ... VXML DATA
- (12) ... SEMANTIC DATA
- (13) ... SPEECH RECOGNITION DATA
- (14) ... CODED VOICE DATA FOR SPEECH RECOGNITION
- (15) ... VOICE
- (16) ... COMMUNICATION PROTOCOL
- (17) ... VOICE CALL
- (18) ... DESCRIPTION
- (19) ... VOICE DIALOG LINK
- (20) ... SPEECH RECOGNITION LINK
- (21) ... TABLE 2
- (22) ... COMMUNICATION DATA FORMATS AND

COMMUNICATION PROTOCOLS EMPLOYED BETWEEN SERVICE MEDIATING
APPARATUS AND SERVICE PROVIDING APPARATUSES

(23) ... SERVICE MEDIATING APPARATUS OR SERVICE
PROVIDING APPARATUS (LOCAL)

(24) ... SERVICE MEDIATING APPARATUS OR SERVICE
PROVIDING APPARATUS (DESTINATION)

(25) ... DIALOG DATA

Figure 9:

- (1) ... SERVICE REQUESTING APPARATUS
- (2) ... DIGITALIZATION OF VOICE → COMPRESSION CODING
- (3) ... VOICE CALL I/F
- (4) ... VOICE INPUT
- (5) ... SPEECH RECOGNITION CONTROL
- (6) ... SPEECH RECOGNITION ENGINE
- (7) ... EXECUTION OF COMMANDS
- (8) ... DATA COMMUNICATION
- (9) ... VOICE OUTPUT
- (10) ... TEXT-TO-SPEECH
- (11) ... TELEPHONY I/F
- (12) ... BUFFER
- (13) ... DECODING/DECOMPRESSION
- (14) ... VOICE PACKET COMMUNICATION
- (15) ... COMPRESSION CODING → PACKETIZING
- (16) ... DEPACKETIZING → DECODING/DECOMPRESSION
- (17) ... MATCHING OF SPEECH RECOGNITION DATA WITH
VOICE DATA

- (18) ... SERVICE MEDIATING APPARATUS
 - (19) ... VOICE BROWSER (VXML INTERPRETER)
 - (20) ... GENERATION OF DIALOG SEQUENCE
 - (21) ... GENERATION OF SERVICE REQUEST
 - (22) ... SEMANTIC INTERPRETATION
 - (23) ... GENERATION OF VOICE CONTENTS
 - (24) ... VOICE PACKET COMMUNICATION
 - (25) ... SPEECH RECOGNITION SERVICE PROVIDER
- (SERVICE PROVIDING APPARATUS)
- (26) ... IP NETWORK

Figure 10:

- (1) ... SELECTIONS
- (2) ... CATEGORY
- (3) ... RESTAURANT
- (4) ... THEME PARK
- (5) ... SUBCATEGORY
- (6) ... ITALIAN
- (7) ... JAPANESE
- (8) ... AMUSEMENT PARK
- (9) ... NAME OF ESTABLISHMENT
- (10) ... EVALUATION
- (11) ... TASTE: GOOD, PRICE: HIGH, PARKING CAPACITY:
10 CARS, SERVICE HOURS: 10:00-22:00
- (12) ... SEARCH FOR SPEECH RECOGNITION ENGINE

- (13) ... SERVICE PROVIDING APPARATUS
- (14) ... SPEECH RECOGNITION ENGINE
- (15) ... LINK-TARGET APPARATUS

Figure 11:

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<prompt>SELECT A SHOP</prompt>
<link jump="SERVICE PROVIDING APPARATUS 200A"
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Figure 12:

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100 ... SERVICE MEDIATING APPARATUS 100
200A ... SERVICE PROVIDING APPARATUS 200A
300C ... SERVICE REQUESTING APPARATUS 300C
1201 ... RECEIVE VOICE INPUT FROM USER
1202 ... TRANSMIT VOICE DATA
1203 ... RECEIVE VOICE DATA
1204 ... RECOGNIZE VOICE DATA
1205 ... IS SPEECH RECOGNITION ENGINE OWNED BY
SERVICE MEDIATING APPARATUS 100 ? (SPECIFY LINK-TARGET
APPARATUS AND ITS SPEECH RECOGNITION ENGINE)
1206 ... CONTROL REQUEST PROCESSING
1207 ... RECOGNIZE REQUEST
1208 ... IS RECOGNITION SUCCESSFUL ?
1209 ... INPUT/OUTPUT INFORMATION THROUGH OPERATOR
1210 ... PROCESS INFORMATION TO PROVIDE SERVICE
1211 ... RECEIVE SERVICE/INFORMATION
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